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FAA AVIATION NEWS

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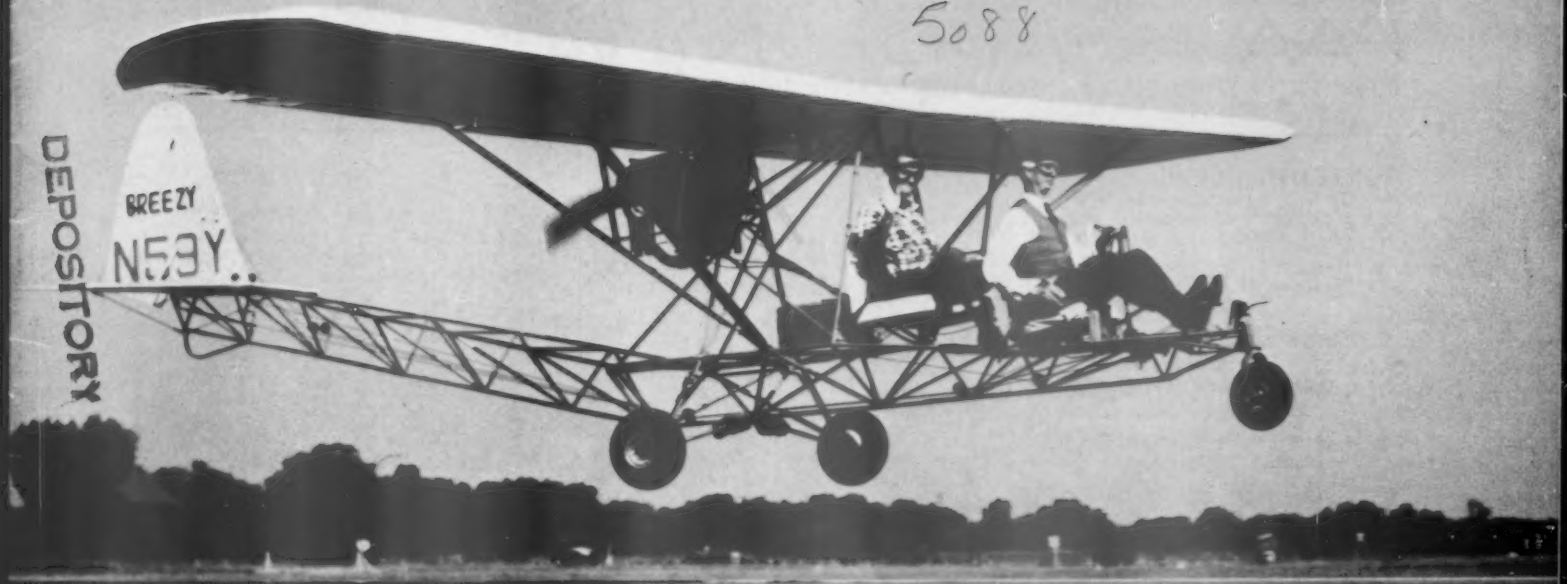

DEPOSITORY

COVER

For all its ancient appearance, "Breezy", built by Carl Unger, is really an up-to-date aircraft incorporating modern materials and design concepts. For more about building your own aircraft with FAA's approval, see page 10.

FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION / **FEDERAL AVIATION ADMINISTRATION** VOL. 7 NO. 12

CONTENTS / April 1969

3 Taxi! Taxi!

4 Pilots and Pesticides

6 Status of Federal Aviation Regulations

7 The Course that Refreshes

8 Soft Fields and Hard Knocks

10 Happy Homebuilts

12 Famous Flights: Splashdown in the Potomac

13 Pilot Briefs

14 Newslog:

Historic Race Revived
FAA Doubles Pool of Aircraft N-Numbers
General Aviation Operations Down
Terminal Changes to Help Handicapped

15 Flight Forum

Page 4

Page 8

David D. Thomas, *Acting Administrator, FAA*

Charles G. Warnick, *Director of Information Services*

Lewis D. Gelfan, *Editor*

Frank J. Clifford, *Assoc. Editor.* Abner B. Cohen, *Art Director*

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Air taxis like this 17-place twin are now serving 843 airports.

Higher Operating Standards Proposed for Growing Industry

Far reaching changes to the rules have been proposed by FAA in the latest of a series of regulatory actions intended to upgrade the safety and reliability of the fast-growing air taxi industry.

The proposed rules would apply to all air taxi and commercial operations using small aircraft weighing 12,500 lbs. or less (including helicopters), regardless of whether service is scheduled or non-scheduled.

Similar in many respects to the operations rules for large air transports, the proposal would not only alter existing operating requirements, but would also establish several new rules. New or revised rules are proposed in 36 specific areas of operation, including:

Icing conditions. Part 135.85 would be relaxed to grant the pilot-in-command greater leeway in judging the reliability of icing forecasts when deciding upon the continuation of a flight.

Pilot-in-command qualifications. These would be increased for VFR, IFR and night operations. For day VFR, a minimum of 500 hours pilot time, with specified experience. In the case of airplanes, an instrument rating or ATR certificate for airplanes would be required. For IFR or night operations—a minimum of 1,200 hours, with specified experience. In the case of airplanes an instrument rating or ATR pilot ticket for airplanes.

Company manuals. Except for small operators who hire no other pilots, all operators would be called upon to maintain a company operations manual, for the safe and orderly conduct of the service.

Search and rescue. Certificate holders would be required to establish flight procedures which would assure timely notification of search and rescue facilities if an aircraft is overdue or missing. Filing of an FAA flight plan would satisfy this rule, which would also apply to scenic flights into isolated areas.

Runway lengths. Pilot-in-command would have to be familiar with all available information regarding runway lengths and aircraft performance under all conditions of wind, temperature and density altitude.

Alcoholic beverages. Rules limiting the serving and drinking of alcoholic beverages similar to those now applicable to large air carriers.

Second-in-command. A second pilot would be carried on all transports capable of accommodating more than ten occupants. The second-in-command would provide an extra margin of safety in small aircraft with high seating capacity.

Cabin attendant. Aircraft with a passenger seating capacity or more than nine (when the cabin is separated from the cockpit) or with a passenger seating capacity of 15 when there is no separation, would have on board a trained flight attendant.

Flight training and testing. Both pilots and cabin attendants would be required to take appropriate training under a program designed by the operator. Periodic testing would also be given, including an FAA flight and oral test given to the pilot-certificate holder. A periodic flight check, given by an approved check pilot or by an FAA pilot, over a representative airway or off-airway route would be required for IFR operations.

Emergency flotation. For overwater operations, suitable flotation equipment for each occupant would be needed.

Aircraft inspection. Aircraft inspection programs are proposed which would be established by FAA or by the certificate holder, in place of those required or permitted under Part 91.

Mechanical reliability reports. All mechanical failures, interruptions, malfunctions or defects would be reported to FAA in a manner similar to the requirements under Part 121. Such incidents as unscheduled change of aircraft or unscheduled stop or diversion from route, etc. would have to be included in the reports.

In proposing higher safety standards for air taxis, FAA cited the tremendous increase in this type of air service recently. Over the past 15 years, the overall number of air taxi operators has increased from 2,000 to more than 5,000. The number of operators providing scheduled air taxi service has risen from less than 80 at the end of 1965 to over 240 at the close of 1968. About 5 million passengers annually are now using air taxis.

The proposed rulemaking also reflects the recommendations of the National Transportation Safety Board and its concern with the accident rate of air taxis taken as a whole. In a study of 577 air-taxi accidents from 1964 through 1966, the Board found a passenger-fatality rate of 7.65 deaths for every 100 million passenger miles flown. The comparable rate for scheduled domestic airlines was 0.25.

Comments on the proposal (Notice 69-4; Docket 8041) should be submitted before May 1, 1969, to FAA Rules Docket, GC-24, 800 Independence Ave., S.W., Washington, D.C. 20590. Copies of the proposal may be requested from this publication. ■

Aircraft like this Agwagon, especially designed and built for low-level flying for spraying or dusting, now serve about 65 million acres of U.S. farmland every year.

Pilots and Pesticides

A review of chemical pesticides, their development, regulation and potential harm.

Editor's note: Earlier articles in this series (June, September 1968) described modern cropdusting aircraft and the maneuvers which pilot and plane must be able to perform in cropdusting operations. The present article examines the pest control chemicals dusters will be applying through the summer months and the problems posed by these materials for the applicator, the farmer and the general public.

No agricultural development in recent years has been more dramatic than the change in the nature, effectiveness and volume of pesticides used on our farmlands. Pesticides are not new—bug-killing chemicals have been used for generations. Oldsters among us who have had contact with agriculture as long as 30 years ago remember using Bordeaux mixture (lime and copper sulfate) and Paris green (copper arsenite). Farmers also used lead and copper arsenates, a few other metallic compounds, sulphur and some products of plant origin such as nicotine. These "poisons" comprised the total stock of weapons against all insects and plant diseases.

Crop dusters still flying can remember dusting cotton and other crops with calcium arsenate as recently as the 1940s.

Nobody complained much about chemical contamination of food products or the environment in those days, although the chemicals used than were as poisonous to man as many of those in use today. Because the treatment of crops on small farms was spotty and sporadic, the total amount of chemicals used was small by today's standards. For the most part, insects were simply given a fair share of the crops and part of the job of processing food consisted of culling out and discarding the portions unfit for human consumption.

DDT First Modern Pesticide

The era of modern pesticides really dates from 1941, when a highly-effective insecticide, DDT (dichloro-diphenyl-trichloroethane), became available in useful quantities for the first time. DDT was first synthesized in 1874, but it remained virtually unknown until the stimulus of World War II provoked large scale production in this country—chiefly to protect U.S. Armed Forces serving overseas from disease-bearing mosquitos and other annoying bugs.

Through the 1940s and 1950s, DDT was followed by many other chlorinated organic insecticides (now called "organochlorine compounds") such as *lindane, chlordane* and *dieldrin*.

The most effective insecticides of all, the organophosphorous compounds, became available during the same period. The best known of these are perhaps *parathion* and *malathion*, but hundreds have been synthesized and dozens are now in common use.

When selective herbicides such as 2-4-D (2, 4-dichlorophenoxy acetic acid) were introduced, also in the 1940s, man possessed for the first time a "chemical hoe" to eradicate many weeds while leaving the desirable vegetation relatively unaffected.

Now there are many types of fairly specific agricultural chemicals, each designed to attack a particular type of pest or plant disease. The broad category, "pesticides," is commonly divided into ten subclasses listed below.

Pesticide	Use
Defoliant/ Desiccant	Causes leaves to dry up and fall from plants—used against weeds and also to remove leaves from fully grown plants, such as cotton, at harvest time to permit easier harvest by modern farm machinery.
Fumigant	Kills weevils, etc. in stored grain.
Fungicide	Used especially in moist climates to kill fungi and mold and check growth of their spores.
Growth regulator	Retards or stimulates growth by hormone action.
Herbicide	Kills weeds. (Some cause them to overgrow, consume their food supply, and die.)
Insecticide	Kills insects.
Miticide	Kills mites and other spider-like pests.
Repellent	Protects dairy cattle from flying insects.
Rodenticide	Kills rats and mice.

These specific chemicals developed for specific purposes have brought about a revolution in agriculture and a steadily increasing demand for pesticides in this country and abroad. *Agriculture Department estimates show that in 1967, approximately 800 million pounds of pesticides (including petroleum oils) were used in U.S. agriculture.*

Airplanes have captured a good share of the business of applying chemicals by virtue of two natural advantages: speed (coverage of wide areas, proper timing) and access (wet lands) remote areas, mature forests). According to the *Pesticide Review*, 1968, 65 million acres were treated from the air in 1966. A total of 5,200 agricultural aircraft flew about a million hours.

Although 65 million acres may loom large, this is only *one-fourteenth* of the almost 900 million acres within the 48 contiguous states classified as agricultural land. Aerial application is popularly identified with pesticide use because it dramatizes this type of chemical treatment of the land.

Certain conservationists and experts in the field of environmental health are concerned about the quantities of "foreign" chemicals added to the soil year after year.

Some materials should not worry them. Sulfur, for example, is non-toxic and blends quickly with the soil. Light petroleum fractions either blend into the soil or vanish into the atmosphere. These two products account for about half of all pesticides we use. The remaining half gives some cause for concern.

Dr. Paul D. Smith examines cans of parathion, one of dozens of insecticides in common use in aerial application. Extreme caution is needed in warehousing and transfer of pesticides to ag aircraft.

Before a new pesticide wins governmental sanction it faces rigorous testing to determine danger level for human beings.

Left—Department of Agriculture scientist extracting toxic substances from poisonous plant material in search for safe, effective methods to control or eradicate harmful vegetation.

It is an unfortunate fact of life that many pesticides, particularly the insecticides, can be toxic to man and other animals, as well as the bugs and weeds they are designed to kill. Pesticides work by affecting a vital physical or chemical process, and all forms of living things, high and low, have certain processes in common.

For this reason, we must have careful government regulation and control of both types and quantities of chemicals used in order to guarantee that the health and safety of human beings and desirable wildlife are protected. Today, there is no business activity that is regulated more drastically than the production and use of pesticides.

No one can produce or sell a pesticidal chemical at will; no farmer can select any pesticide he wishes and spread it as he chooses; and no contract applicator, ground or air, can afford to be a party to non-regulated application. To illustrate the nature of these controls, let us trace an imaginary pesticide from origin to final farm use.

Approving a Pesticide

As soon as the pesticidal properties of Chemical X have been established, the manufacturer who holds patent or production rights must develop a complete dossier of all its important properties. If Chemical X is intended for use as an insecticide, its potential for harming plants must be tested on a variety of species at different stages of growth. Its effect on warm-blooded animals must be determined on several species of laboratory animals.

In the course of these tests a figure called the LD_{50} (lethal dose for 50 percent of the animals tested) will be established. This criterion enables the toxicity of Chemical X to be compared with that of other pesticides, and its probable hazard to man assesssed.

Various methods of formulating Chemical X in the proper solvent and in the proper concentrations for field use are tested. Its chemical stability and its persistence on plants and in the soil must be known. A method for detecting and measuring Chemical X must be available.

When all these facts are known, a "label" is prepared which assigns Chemical X a trade name, describes its usefulness, gives full directions for use and information about its toxicity for man.

The completed dossier, plus the label, is submitted next to the Pesticides Regulations Division, Agricultural Research Service, U.S. Department of Agriculture. If the information is considered adequate and the pesticide judged to be suitable for its intended use, the material will be registered and released for distribution. If the manufacturer licenses other formulators to use the active chemical either in a similar or a different mixture, each must register it with the Pesticides Regulations Division.

Before Chemical X goes into the hopper, the Food and Drug Administration steps in. On the basis of a battery of facts on animal toxicity, FDA will set a tolerance limit for the amount of residue of Chemical X which can remain at harvest on crops, intended for use as food by man or, in some cases, by dairy or meat animals.

This value must take into account the estimated amounts of the food crop which will be consumed by man or food animals, and whether or not Chemical X is "cumulative" (whether it is retained in the body and may build to toxic levels from repeated small doses). On the basis of persistence on treated plants, recommendations are made as to the minimum interval between the last application and harvest, and the amount of Chemical X which can safely be used for the last treatment.

Frequent Safety Checks

These regulations concerning residues are enforced by frequent spot-checks of foods which reach the open market. Sensitive methods of analysis now exist for measuring pesticide residues, and if a food product is carrying amounts of Chemical X which exceed the tolerance limit (for many pesticides it is only a few parts or perhaps a fraction of a part per million) it is condemned.

Assuming all of these hurdles have been safely cleared, Chemical X is not simply turned loose on the market. States have regulations too. Throughout the winter, entomologists are busy preparing estimates of the type and magnitude of insect problems for the coming year. Agronomists estimate the acreage of a variety of crops. From these estimates come recommendations as to the most effective pesticides for use in the particular area during the coming season. Chemical distributors stockpile on the basis of such estimates. As an end result, farmers and applicators in each region may have only a few materials from which to select.

Thus, every effort is being made to protect the public from pesticides. There is no evidence to date that there have been any harmful effects from the low levels which the average person encounters. For several years, the use of the organochlorine compounds, sometimes called "hard" pesticides because they are stable chemicals which persist in the soil and accumulate to a small extent in body tissues, has been declining. This trend will comfort conservationists because there is some evidence that these compounds are more harmful to certain forms of wildlife than to man. ■

Paul D. Smith, PhD,
FAA Civil Aeromedical Institute

(Part II of this article will discuss the dangers faced by aerial applicators who, in the course of their work, are exposed to quantities of lethal chemicals far above the amounts considered safe for human consumption.)

STATUS OF THE FEDERAL AVIATION REGULATIONS

As of March 10, 1969

With the October 1968 issue, FAA AVIATION NEWS began publication of a quarterly report on the status of all Federal Aviation Regulations, showing additions and deletions, number of changes, and purchase price.

Changes are normally sent automatically without charge to purchasers of Federal Aviation Regulations. Check or money order for FARs should be made out to "Superintendent of Documents" and sent to:

U.S. Government Printing Office
Washington, D.C. 20402.

FAR PART NO.	TITLE	PRICE	CHANGES
1	Definitions and Abbreviations	$0.35	15
11	General Rule-making Procedures	.20	9
13	Enforcement Procedures	.25	7
15	Nondiscrimination in Federally Assisted Programs of the Federal Aviation Administration	.20	....
21	Certification Procedures for Products and Parts	.60	21
23	Airworthiness Standards: Normal, Utility, and Acrobatic Category Airplanes	1.25	6
25	Airworthiness Standards: Transport Category Airplanes	2.25	18
27	Airworthiness Standards: Normal Category Rotorcraft	.70	3
29	Airworthiness Standards: Transport Category Rotorcraft	.75	4
31	Airworthiness Standards: Manned Free Balloons	.20	2
33	Airworthiness Standards: Aircraft Engines	.40	3
35	Airworthiness Standards: Propellers	.30	2
37	Technical Standard Order Authorizations	1.00	5
**39	Airworthiness Directives	.10	1
43	Maintenance, Preventive Maintenance, Rebuilding, and Alteration	.30	9
45	Identification and Registration Marking	.20	6
47	Aircraft Registration	.25	5
49	Recording of Aircraft Titles and Security Documents	.20	4
61	Certification: Pilots and Flight Instructors	.70	29
63	Certification: Flight Crewmembers Other Than Pilots	.35	10
65	Certification: Airmen Other Than Flight Crewmembers	.35	12
67	Medical Standards and Certification	.25	7
*71	Designation of Federal Airways, Controlled Airspace, and Reporting Points	.20	4
*73	Special Use Airspace	.20	1
*75	Establishment of Jet Routes	.20	2
77	Objects Affecting Navigable Airspace	.35	7
91	General Operating and Flight Rules	.70	38
93	Specific Air Traffic Rules and Airport Traffic Patterns	.35	15
**95	IFR Altitudes	.20	....
**97	Standard Instrument Approach Procedures	.20	1
99	Security Control of Air Traffic	.25	7
101	Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons	.20	2
103	Transportation of Dangerous Articles and Magnetized Materials	.20	5
105	Parachute Jumping	.20	4
121	Certification and Operations: Air Carriers and Commercial Operators of Large Aircraft	1.50	30
123	Certification and Operations: Air Travel Clubs Using Large Airplanes	.25	....
127	Certification and Operations of Scheduled Air Carriers with Helicopters	.35	10
129	Operations of Foreign Air Carriers	.20	4
133	Rotorcraft External-Load Operations	.20	3
135	Air Taxi Operators and Commercial Operators of Small Aircraft	.35	5
137	Agricultural Aircraft Operations	.25	3
141	Pilot Schools	.35	7
143	Ground Instructors	.20	3
145	Repair Stations	.40	8
147	Mechanic Schools	.20	1
149	Parachute Lofts	.25	1
151	Federal Aid to Airports	.40	27
153	Acquisition of U. S. Land for Public Airports	.20	3
155	Release of Airport Property from Surplus Property Disposal Restrictions	.20	....
157	Notice of Construction, Alteration, Activation, and Deactivation of Airports	.15	1
159	National Capital Airports	.30	11
161	(Deleted effective 6/1/66)		
163	(Deleted effective 7/1/65)		
165	Wake Island Code	.30	1
167	Annette Island, Alaska, Airport	.15	—
171	Non-Federal Navigation Facilities	.25	4
181	(Rescinded 4/1/67)		
183	Representatives of the Administrator	.20	Re-issued March 1968
185	Testimony by Employees and Production of Records in Legal Proceedings	.20	"
187	Fees	.20	"
189	Use of Federal Aviation Administration Communications System	.15	"

* Changes to individual airspace designations and airways descriptions, individual restricted areas, and individual jet route descriptions are not included in the basic Parts 71, 73 and 75 respectively because of their length and complexity. Such changes are published in the Federal Register and are included on appropriate aeronautical charts.

**Due to the complexity, length, and frequency of issuance, airworthiness directives, enroute IFR altitudes and instrument approach procedures are published in the Federal Register and therefore are not included in the basic Parts 39, 95 and 97. In addition, enroute IFR altitudes and instrument approach procedures are published in the Airman's Information Manual, and are depicted on aeronautical charts.

Left—Veteran instructors attend course to polish skills. **Right**—Carl Edmison reviews aircraft operating principles with Albany class.

The Course that Refreshes

A growing number of America's 44,421 flight instructors are trooping back to classrooms in hundreds of cities from coast to coast, and in such far away places as Alaska, Hawaii and Puerto Rico. At a nominal cost, the instructors are attending three-day mid-week refresher courses to polish up their teaching techniques and to learn the latest wrinkle in turning wishes into wings.

The "back-to-school" movement for flight instructors was started in March 1962 when 20 instructors gathered in Great Falls, Mont., for a 10-day skill-sharpening skull session with a traveling group of FAA instructors from the FAA Academy at Oklahoma City. Instructors have been flocking to the courses in increasing numbers ever since, and FAA has expanded its teaching force to three teams who are on the road almost 60 per cent of the time.

In 1968, 7,426 instructors passed through the modernized three-day FAA course; 1,700 have already attended during the first six weeks of 1969. James W. "Pete" Campbell, chief instructor and the man credited with inaugurating the FAA refresher programs, calls the 1968 attendance a 52 per cent gain over the previous year. According to his rollbooks, 14,047 instructors have been through the mill since the first session in 1962.

While the instruction is carried out by FAA personnel, the courses are sponsored by a variety of private aviation groups, such as the Aircraft Owners and Pilots Association, the National Association of Flight Instructors, the "99s" (a women's flying society), and by colleges and state aeronautical departments.

All arrangements, such as hotel accommodations, lecture halls, invitations to attend, and fees are handled by the sponsoring group. Clinic sponsors have varying prices; the average fee is $25. FAA makes no charges for its participation and provides a useful package of instructional material at no cost to all who attend. This has the advantage of reinforcing the student's memory long after the classroom sessions end.

Classes are scheduled (whenever possible) to run from Tuesday through Thursday, with each of the three days crammed with a full day of instruction. Frequently, the FAA Academy teaching team is supplemented by local FAA personnel, such as control tower and flight service station chiefs. Their inclusion in the program is generally in response to a problem peculiar to the region where the refresher course is being given—perhaps a general aviation airport near a military field or a heavily used major airport.

All instruction is pegged at the flight instructor level and liberal use is made of audio-visual training aids. Student participation is encouraged and sessions are frequently peppered with lively exchanges between the Academy men and the flight instructors. Personal experiences and problems are tossed into the arena for "solution" and for the education of all participants.

With one exception, all FAA Flight Instructor Refresher Courses concentrate in one of two areas—VFR or IFR. The airplane course concerns itself with VFR flight and medical standards applicable to private and commercial pilots, airplane maneuvers, takeoffs and landings, and FARs. The instrument flight instructor course concentrates on the specialized skills needed for IFR pilots and instructors. Both courses include the fundamentals of instruction.

The exception is a special combination instrument and multi-engine instructor course, newly organized, which will be conducted in Norfolk, Virginia in April 1969.

Persons interested in obtaining an FAA Academy team to conduct a flight instructor refresher clinic are urged *not* to write to the Academy. The proper procedure is direct or mail a request to the nearest FAA general aviation district office six months in advance. Obviously, not every request can be filled, and in many cases several small groups are combined into one. But at some point in the year each geographical area of the nation will be served. ■

Instructor refresher courses will be conducted at the following locations for the remainder of this fiscal year. Persons interested in attending any of these courses should contact the sponsor.

LOCATIONS AND DATES OF INSTRUCTOR COURSES

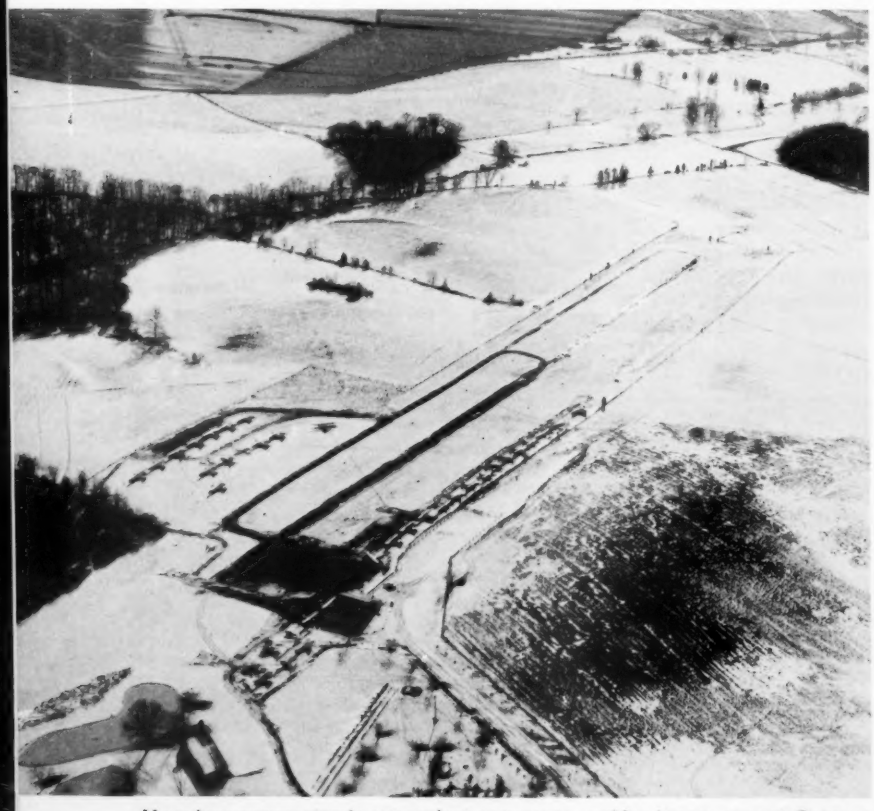
Salt Lake City, Utah (I)	4/8-10/69	Utah Division of Aeronautics
Wichita, Kansas (I)	4/8-10/69	Civil Air Patrol
Charleston, W.Va. (A)	4/15-17/69	AOPA & W.Va. Aero. Bd.
Hartford, Conn. (A)	4/22-24/69	Conn. Aeronautics Comm.
Denver, Colo. (A)	4/22-24/69	AOPA & Colo. Instructors Assoc.
Norfolk, Va. (I & M)	4/29-30/69	Va. Div. of Aeronautics
Monroe, La. (A)	5/6-8/69	FAA GADO, Shreveport, La.
Madison, Wisc. (I)	5/6-8/69	Wisc. Dept. of Aeronautics
Ontario, Calif. (I)	5/13-15/69	Mt. San Antonio Jr. College and AOPA
Amarillo, Tex (I)	5/20-22/69	Texas Aeronautics Comm.
Albany, N.Y. (A)	5/20-22/69	N.Y. Dept. of Transp.
Anchorage, Alaska (A)	5/27-29/69	Alaska Transp. Comm.
Penn State Univ. (I)	6/3-5/69	Penn State Univ. & Penn Aero. Comm.
Univ. of Illinois (A)	6/10-12/69	University of Illinois and AOPA
Atlantic City, N.J. (A)	6/10-12/69	Civil Air Patrol*
Norman, Okla. (A)	6/17-19/69	Okla. Aeronautics Comm.
San Mateo, Calif. (A)	6/24-26/69	San Mateo Jr. College

(A) Airplane course
(I) Instrument course
(I&M) Instrument and multi-engine
(*) Open to all pilots

Partly melted snow often creates a deceptive illusion on terrain, effectively concealing the runway (arrows). Permanent feature, such as road, is a good landmark. Darker patches at upper end of runway indicate wetter ground that could be hazardous for landing aircraft.

SOFT FIELDS AND HARD KNOCKS

A primer on spring flying at unpaved airfields



Macadam runway stands out against snowscape, making it easy to spot. Because the black surface absorbs solar heat, its snow cover melts faster than on surrounding earth. While the runway may appear smooth at altitude, spring thaws could have caused the surface to heave. Before landing make a low-level pass or use UNICOM to get an accurate picture of field conditions.

Above—snow-filled tire tracks may conceal deep ruts in runway surface caused by alternate freezing and thawing during day and overnight. **Below**—"bogus" runway (arrow) is created by uneven thawing over subterranean utility lines.

"When that Aprille with her showers sweet Hath snared the birdman by his winged feet . . ."

Poets since Chaucer's time have sounded gentle but urgent warnings about the unexpected snares of springtime. Not the least of these is the aircraft runway which, after the first touch of April sun, is ready and willing to cause all manner of landing or takeoff accidents to the unwary pilot.

Unpaved runways, in particular, are treacherous at this time of year. Even in the absence of rainshowers, the thawing of the earth as the temperature rises can produce an extremely unstable surface. The sod strip that was a breeze to handle last summer, and has generally held up pretty well through fall and winter, could turn into a bog this month if the climate has favored a heavy accumulation of water in the ground, or if there has been a warm spell in early spring.

Well-managed airports will mark off unusable runways with a large cross, but even where the airport is evidently in use, extreme caution is called for in landing or taking off from any unpaved strip this time of year. Tricycle landing gears have more difficulty with soggy fields than tail wheel gear; the vulnerability of the nose wheel calls for special landing and takeoff procedures which pilots should know, since emergency landing areas are usually bare earth.

Most owners' manuals contain soft field landing and takeoff recommendations for the particular type of aircraft, and these should be studied carefully. Soft field instructions are differentiated clearly from *short* field techniques. Although these procedures are alike in some aspects, they differ in others.

The steep approach required for a short field landing, for example, does not apply to the wet field approach unless the landing area is extremely limited or there are obstacles in the glide path. Touchdown on a soft or rough field should be made at the lowest possible airspeed, with a nose-high attitude maintained with power, as required. The nose wheel should be held clear of the surface as long as possible. Braking on muddy ground is extremely unreliable, and should be done very cautiously to avoid putting pressure on the nose wheel. Raising the flaps soon after touchdown is important.

With tailwheel aircraft, the rear wheel should touch down with, or just before, the main gear, and should be held down with the elevators throughout the landing roll.

Generally full flaps will be used during the last segment of the approach to reduce landing speed as far as possible. However, the use of flaps will depend on field conditions, the type of aircraft, and on the manufacturer's instructions. Mud, rocks or slush thrown up by the wheels could damage flaps, especially on some types of low-wing aircraft. If the field is so soft that a wheels-up landing is in order, a full flap extension could result in landing on the flaps instead of on the fuselage. Incidentally, some manufacturers recommend that the door be opened before making a gear-up landing to prevent its jamming shut.

Some aircraft are designed to take a gear-up landing without serious damage to the structure. The decision to land with wheels up or down must be based on the pilot's judgment of the field conditions balanced against his knowledge of his aircraft's performance. Weight and balance also enter into the picture. An aircraft loaded to its maximum gross weight, carrying a large supply of fuel, is going to have more trouble setting down on a boggy field than a lightly loaded aircraft with nearly empty tanks.

Judging the condition of an unfamiliar airstrip from the air always involves a certain amount of guesswork. One method of eliminating the guesswork is to contact the airport UNICOM, if in existence and operating. If not, try the nearest flight service station or attempt to contact active aircraft on or near the field.

A soft runway that apparently presents no difficulties to local flyers may hold unseen terrors for the itinerant pilot who is not familiar with several bottomless potholes that can be avoided with some warning. Most unpaved strips are not entirely level, so that a knowledge of how the water drains and where it tends to collect can make a lot of difference in deciding where and how to touch down. Hilly prominences are usually the driest and most solid portions of unpaved runways.

With a normal wheels-down landing on a soggy field, stopping distance is usually no problem, but the nose-high attitude makes it difficult for the pilot to see ahead since the cleared area may be only a narrow strip. It is important that he line himself up with the runway properly before touchdown. If the runway is soft, he can expect worse from an unplanned sortie into the adjoining field.

Proper use of soft field techniques for landing and takeoff is a private pilot flight test maneuver, and proficiency should be sought, under proper supervision. Mud runways are notoriously hard on landing gear, propellers and engine, not to mention the owner's temper and pocketbook. But pilots can sharpen their judgment about the condition of emergency strips at this time of year by making passes over them and attempting to estimate the softness of turf by the color of the soil, appearance of grass, weeds, etc., and later checking aerial observations with a field trip by car or on foot.

When flying from a wet grass field, experienced pilots never assume that there will be a dry area at the end of the runway for instrument check and engine runup. If the plane is parked on hard ground, they will run through the check list before starting to taxi. There may not be an opportunity to bring the plane to a stop again until the next landing.

The takeoff from a soft field requires careful preparation. The pilot should plan to use the maximum area available, and anticipate the fact that the dragging effect of a mucky field may give him problems in clearing obstacles such as trees or poles. At least 25 per cent of additional runway may be needed and possibly as much as 100 per cent. The flap setting in accordance with manufacturer's instructions is important; usually at least 25 degrees of flaps are recommended, in order to achieve liftoff at a minimum speed.

On a soft field the takeoff roll should begin as soon as the throttle is opened. The technique involved in taking off from a rough, boggy or snow-covered field is altogether different from that applicable to short firm runways. The object is to transfer the weight of the aircraft from the wheels to the wings as quickly as possible, in order to relieve the drag caused by mucky terrain.

As soon as the elevator becomes effective, the nose wheel or tailwheel is brought off the ground and the aircraft is maintained in a nose-high attitude. The hight lift angle causes the aircraft to become airborne at an airspeed slower than safe climb speed. When liftoff occurs, the angle of attack should be reduced gradually with the wheels just clear of the surface until the best angle-of-climb speed is achieved.

When a pilot is faced with the problem of clearing obstructions soon after a soft-field takeoff, he should be prepared to climb at the best *angle-of-climb*. He must understand that the best angle-of-climb is the airspeed which will enable him to clear a given obstacle with the least amount of *forward movement*, whereas the best rate-of-climb is the airspeed which will bring him to a given altitude in the shortest possible *time*. (The latter is the higher airspeed.)

In close conditions, make certain that your airspeed is precise. If the correct speed, according to the owner's manual, is 80 knots, whether you climb out at 75 or 85 knots can be the difference between a clear blue sky ahead and a face full of mud. (Especially true of high performance and multi-engine aircraft.)

Half the problem of getting out of soft fields is solved by learning when it is safe to land in the first place. If you are practicing emergency landings in April, keep the wheels off the ground until your area has enjoyed a long dry spell. Those April showers may be great for poets and farmers, but they can turn a sod into a quagmire overnight. Stay clear, and keep clean. ■

Lewis Gelfan

FAA's Flight Training Handbook, AC 61-21, available from the U.S. Government Printing Office, Washington, D.C. 20402 for 70 cents, contains further details on landing techniques.

Happy Homebuilts

John Astlund power checking his handcrafted Stolp-Adams **"Starduster"** prior to flight.

Build your own airplane? Why not? Paul H. Poberezny, President of the Experimental Aircraft Association, estimates that some 7,000 homebuilt aircraft are currently taking shape in garages, living rooms, attics, cellars, barns—and even hangars—all over the country. Completion dates may be years in the future, but the age-old urge to take to the sky in a home-made device is as strong today as ever before.

According to FAA records, as of December 1968 there were 2,636 experimental aircraft registered in the U.S., 1,251 of them in active flying status. The number increases about 300 a year, and there is growing interest in the hobby. As is to be expected, balmy southern California is the capital of amateur aircraft construction, followed closely by Ohio and the central Midwest.

What kind of people build their own aircraft? "Butchers, bakers, candlestick makers —doctors, lawyers and Indian chiefs," according to Poberezny. The Experimental Aircraft Association has 326 active chapters, 53 of which are in Canada and other countries of the world. All told, they number 48,000 members, and growing.

In the tradition of the Wrights, Codys and Langleys, men (and women) with magnificent dreams are stapling, bolting, welding, gluing, riveting, nailing and sewing together a wonderful assortment of flying machines. FAA inspectors see monoplanes in all their varied forms—low-wing, mid-wing, high-wing and parasol—with round tips and square tips and with straight, taper and delta wing plan forms. There are WW I triplane reproductions, and biplanes (open cockpit biplanes are the most popular), and even one negative-stagger biplane reminiscent of the classic Beech *Staggerwing*.

Materials are as varied as the planes. Amateur builders are making aircraft from wood, fabric, metal in various combinations. Fiberglas is used extensively for cowlings, fillets, wheel pants, wing tips, fuel cells and seats. One man is at work on a plane almost entirely made of Fiberglas.

While FAA inspectors see an occasional "wild" concept in aircraft design, the overwhelmingly majority of builders produce conservative designs based firmly on sound aerodynamic theory and practice, and their fabrication methods and techniques follow tested and proven shop practices.

The typical amateur aircraft builder is generally motivated by two strong desires: the urge to fly and the high cost of a factory-made plane. The material cost of the homebuilt aircraft is relatively low, running about $1,500 to $2,000 for a single-engine, two-place monoplane. The labor is "free" as no amateur builder counts it in his final estimate of cost, but it takes the average enthusiast about three years of part-time work to complete his pride and joy.

Who can build an aircraft? (The designation cover airplanes, gliders, free balloons, helicopters and gyroplanes.) According to Federal Aviation Regulations, anyone seized with the desire may build his own aircraft, regardless of his expertise with tools or aeronautical knowledge. In actual practice, most homebuilders have some connection with the aircraft community. Not a few of them are high-time airline and military pilots; some are either professional or self-taught designers, whose aeronautical ratings cover the board.

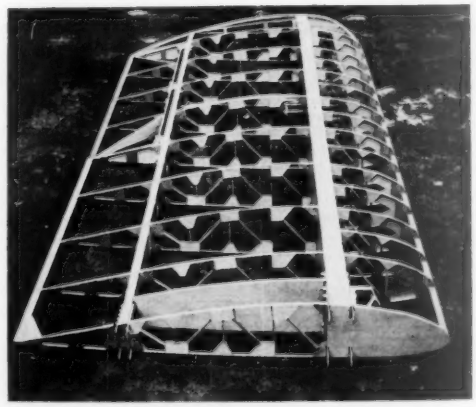
The FAA does have some rules, however, to guide the aspiring aircraft builder along the road to earning an experimental certificate for his creation. The basic rule is that *the aircraft must be at least 50 per cent fabricated and assembled by persons who undertook the project solely for their own education or recreation.*

This is not as tight a frame as might be supposed. The amateur builder is permitted to buy engines, commercially made propellers, rotor blades and hubs, wheels and brake assemblies, and aircraft hardware such as pulleys, fasteners, tubing and extrusions. He may also incorporate structural components of other aircraft, and use raw material constructions kits—provided he has fabricated and assembled the major portion of the aircraft for education and recreation.

A word of caution: if an aircraft is assembled from a kit composed completely of prefabricated components and parts, precut and predrilled materials, FAA will not award it a certificate as an amateur-built aircraft. FAA is serious about its requirement that the *major* portion of the aircraft be fabricated and assembled by the builder.

Before a stick of spruce or a yard of fabric is purchased, amateur aircraft builders are encouraged to visit their local FAA office to talk over their projects. But there is no rule that says they must. Strictly speaking, an aircraft could be built from conception to roll-out without any in-progress inspection by FAA. But this would delay certification considerably.

Before granting a homebuilt aircraft an airworthiness certificate, FAA must determine that the aircraft is not a deathtrap, that it is constructed of quality materials, and put together with care in accordance with sound techniques. Without the FAA airworthiness certificate, the aircraft becomes an expensive grounded monument to frustration.



Left wing of Taylor monoplane shows sturdy wood frame construction, attention to detail.

With rotor turning and propeller spinning, Al Cudney, Raleigh, N.C. prepares to takeoff in his **Benson Gyro-Copter.** Robert Bushby, Glenwood, Ill., in his **"Mustang II."**

Dr. A. Chapeskie, Barry's Bay, Ont., built this two-place **"Sportsman Amphibian."** EAA biplane, with builder Louis Lasner, Mayville, N.Y., at the controls is straining to go.

In-progress inspections present no practical problems and often result in constructive suggestions that save time and money and, more important, contribute to a safer product. FAA representatives will schedule periodic inspections so that the aircraft gets a good going over in stages as it evolves. Thus, wings and fuselages are examined before external covering is applied or before an area is permanently closed. In order to speed the inspection process, and to minimize questions about material specifications, type, quality, and source, builders are advised to keep invoices and shipping documents on permanent file.

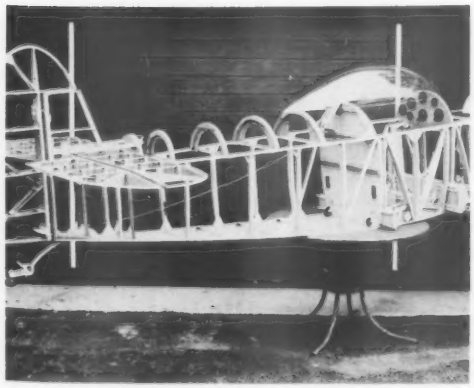
The broad outlines governing construction of amateur-built aircraft are contained in Advisory Circular AC 20-27A "Certification and Operation of Amateur-built Aircraft," available free from the Department of Transportation, FAA, Distribution Unit, TAD 484.3, Wash., D.C. 20590.

FAA has an open mind as far as what goes into constructing an aircraft. For example, any kind of engine, propeller, wheels and other components may be used at the discretion of the builder. Modified Volkswagen, lawn mower and ground power unit engines have been used successfully in aircraft, and some farm implements yield wheels and tires adaptable to airplane use. While FAA regulations do not point a stern finger and say you must use this, that and the next thing in your aircraft, the wisdom of using FAA-approved components and "aircraft quality" materials in such critical members as wing spars, attachment fittings, engine mounts, landing gear and other structural members is obvious.

Similarly, instrumentation is left up to the builder. The aircraft must be equipped with at least the basic flight and engine instruments. Before the first flight, FAA recommends that the engine be given an operational check of at least one hour, with the engine running from idle to full power. Builders are advised to stick to the grade of fuel recommended by the engine manufacturer, and the plane should be tilted in various angles (simulating flight attitudes) to verify full and uninterrupted flow of fuel from tank to engine.

Accompanying the airworthiness certificate is the requirement to placard the aircraft with the word "experimental" painted near the entrance to the cabin or cockpit in plainly legible letters not less than two inches or more than six inches in height. A standard restriction limits early flights to the environs of outlying airports and away from population centers. The usual "try out" time in a restricted flying area for an aircraft with a certificated power plant is 50 hours: 75 hours for an unproved engine.

Before a pilot is free to roam far and wide in his home-built aircraft, he must have an "operating limitations certificate" to permit flight out of the restricted area. Typically, operational limitations describe the airplane, state that it is homebuilt, in the experimental category, and built for personal transportation and recreation. Commercial activity is ruled out, and passengers are limited to personnel essential to flight. The standard final sentence carries the notation that any deviation from operation limitations or any major change in the aircraft will cancel the Airworthiness Certificate.



Fuselage and tail surfaces of low-wing monoplane are ready for covering. Patio table shows light weight of structure.

Airworthiness Certificates issued for "Experimental" category aircraft must be renewed annually, in contrast to the indefinite certificate awarded to factory made aircraft. The aircraft must be registered and the "N" numbers painted on before the first flight.

Flying the homebuilt creation is best approached with caution and must follow the rules laid out in FAR 91, "General Operating and Flight Rules"—with one exception. If the homebuilt aircraft is a gyroglider and flown while attached to a ground or water based vehicle it is considered to be a kite and comes under the provisions of FAR 101, "Moored Balloons, Kites, Unmanned Rockets, and Unmanned Free Balloons."

Building an aircraft from the ground up does not automatically qualify the maker to fly it. He must be licensed as a pilot under FAR Part 91. Numerous taxi tests, at increasing speeds, should be performed before any serious attempt is made to actually fly. Even the big aircraft companies with their elaborate design staffs and well-equipped factories, test out a new aircraft on the ground first.

Flying a rotorcraft is totally different from operating a conventional airplane. Free flight in a rotorcraft should not be attempted until the plane has been tested while tethered to the ground to restrict its movement up and sideways. Tethered tests will demonstrate the stability, vibration and balance characteristics of the craft and will give the pilot actual practice in handling its peculiarities while the plane is close to the ground.

The actual flight test program should be planned to move carefully from the familiar to the unknown. This includes slow flight with stalls, engine-cooling climb tests, and similar maneuvers. The very last thing to be tried are aerobatics or violent maneuvers.

"Amateur," as it applies to the "amateur" airplane makers in the U.S., does them an injustice in view of the sleek, finely tuned creations being rolled out of barn, bedroom and cellar workshops. The urge to give wings to one's dreams has created a major industry in the U.S., and the ingenuity and patience displayed by many amateur builders is still contributing useful knowledge to aviation. Of necessity, FAA keeps a watchful (but fond) eye on them. ■

Frank J. Clifford

famous

FLIGHTS

Splashdown in the Potomac

Langley's Pre-Wright Aircraft Almost Catapulted Him to Fame

The "Aerodrome", constructed by Samuel Pierpont Langley, was flown successfully by airplane builder Glenn Curtiss on Lake Keuka, eleven years after its failure on the Potomac.

Had circumstances been slightly different, Washington, D.C., and not Kitty Hawk, N.C., might be remembered today as the birthplace of manned flight.

Nine days before the Wright Brothers took to the air from Kill Devil Hill, a gasoline engine-powered "aerodrome," with wings and propeller and a man at the controls, was launched from a houseboat in the Potomac. For reasons still unknown, it crashed and sank on takeoff.

The "aerodrome" was the brainchild of a man who, among other accomplishments, built his own telescope, introduced standardized timekeeping to our society, invented astrophysics, conceived the Washington Zoo, and was one of the first to insist that powered flight was possible—yet never patented anything in his lifetime.

Samuel Pierpont Langley was born in Roxbury, Mass., August 22, 1834, the son of a distinguished family and a descendant of Colonial pioneers. With a keen mind and an aptitude for things mechanical, Langley considered civil engineering and architecture as suitable professions, but finally chose astronomy as his career.

It was while at Allegheny that Langley became concerned about the absence of any accurate timekeeping techniques and the lack of a "master" clock. In 1869, he proposed to maintain the correct time by means of astronomical observations and to pass time checks along by telegraph to railroad stations and telegraph offices. The idea was well received and "standard time" was established.

At 50, Samuel Langley began to investigate the possibility that man could fly.

In 1891, the Smithsonian Institution (where Langley was then Secretary) published a paper by the scientist in which he said flatly that "flight at very great speeds is not only possible but within the reach of mechanical means which we now possess."

To prove his point, Langley dubbed his new field of endeavor "aerodromics" (from the Greek meaning "air running") and began building rubber-band powered models. Since virtually nothing was known about the laws of aerodynamics, Langley had to proceed from scratch, as he had with his telescope years earlier.

From the small models, he progressed to larger versions powered by small and somewhat crude steam engines.

Five of these models failed in flight attempts, but on May 6, 1896, Langley and his close friend, Alexander Graham Bell, launched an "aerodrome" that flew for one-and-a-half minutes, going 70 to 100 feet in the air, and traveling some 3,000 feet at 20 to 25 miles per hour.

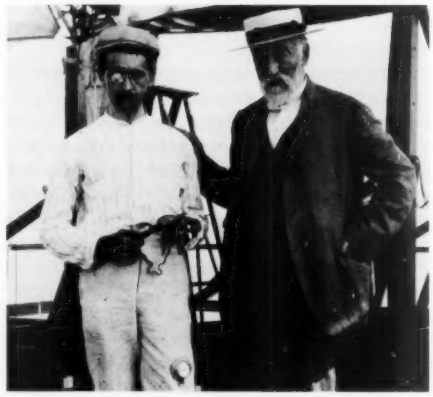
This first sustained flight of a heavier-than-air vehicle was achieved from a catapult launcher atop a converted houseboat, at a place on the Potomac River called Widewater, 30 miles south of Washington, D.C. Two other flights followed, verifying the capability of the 16-foot-long winged vehicle to "fly."

A few months later a letter came from President William McKinley who, as Commander in Chief of the nation's forces then engaged in the war with Spain, asked Langley if he would be willing to direct his aeronautical work towards the early attainment of a manned flying machine.

After much hard work, including the necessity to invent a 50-horsepower gasoline engine weighing no more than 125 pounds (a severe challenge to the technology of the day), Langley and his associates prepared to demonstrate a man-sized machine.

Returning to the catapult launch concept successful three years earlier, Langley built a 60 by 40 foot houseboat with a catapult track mechanism on top. The tracks, 5 feet apart, ran 85 feet, extending out over the edge of the boat, 60 feet above the water.

The first launch was again attempted from Widewater on October 3, 1903. With members of the press watching, Charles M. Manly, Langley's able assistant and long-time partner in the aerodrome project, climbed into the "aviator's car," as the cockpit was then called.



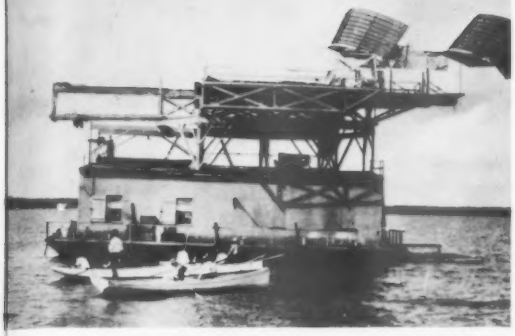
Pilot Charles M. Manley, (left) and Professor Langley aboard the "carrier" houseboat.

The engine was started, the propellers whirred, the catapult was fired, and the aircraft shot down the launch track. But the tail assembly caught on the launching mechanism, the machine wavered, faltered, then plunged off the end of the superstructure and into 17 feet of water.

Manly was unhurt, the machine was salvaged, and Langley vowed to try again.

On December 8, the winds were calm, the day bright. The machine was made ready for flight, but late afternoon arrived before a tug could be located to tow the houseboat out into the river. Meantime, gusts of 18 miles per hour sprang up again.

Langley, however, felt he could afford to wait no longer. The war had long since ended, cancelling the urgent military justification for the project. The $50,000 voted by the War Department had been expended, as had another $20,000 grant given Langley by the Smithsonian. The scientist, now 69 years old, knew that if he did not succeed soon in demonstrating powered flight,



Langley Aerodrome A on "launching track" prior to its unsuccessful flight October 7, 1903. (All photos courtesy of the Smithsonian's Air and Space Museum, Washington, D.C.)

he could expect no further support.

Biographer J. Gordon Vaeth, in his book "Langley: Man of Science and Flight (The Ronald Press, New York, 1966), tells what happened:

"At 4:45 p.m., with Manly in the cockpit and the engine running smoothly at full throttle, the restraining cable was cut. The "aerodrome" sped down the catapult track, eager to reach the end and take to the air. Seconds after the machine got underway, however, it swayed, quivered, nosed upwards sharply, then flipped over on its back and fell into the water."

The second launch had failed and the reason for the failure remains as obscure today as it was then. Eleven years later, in an effort to vindicate Langley's design, the famed airplane builder Glenn Curtiss took the Langley machine out of the Smithsonian, shipped it to upstate New York, and flew it safely on Lake Keuka.

Curtiss' intention was to demonstrate that the launching mechanism, and not the vehicle itself had caused both failures, but this was never proven. In reconstructing the machine and fitting it out with pontoons for the lake takeoff, Curtiss made certain modifications which critics claim altered the plane significantly from Langley's original.

As for Samuel P. Langley, he died of a stroke on February 27, 1906, a heartbroken and disappointed man.

His 1903 "aerodrome" is housed today in the Smithsonian Arts and Industries Building, but not in the most conspicuous place.

The nation's capital just missed the distinction of hosting man's first powered flight.

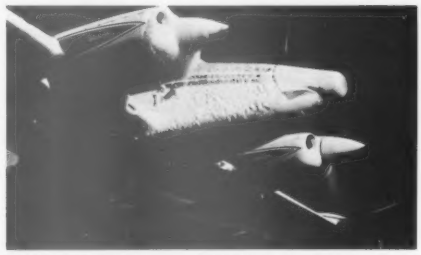
Today, the spot where Langley's aerodrome ended up so ingloriously in the Potomac is flanked by the flourishing Washington National Airport, where more than 10 million passengers boarded or disembarked from airplanes last year.

This is the kind of working monument that would win Professor Langley's approval. ■

John Demeter

BRIEFS

• PILOTS SIGHTING MIGRATORY BIRDS IN FLIGHT are requested to report the sighting to the nearest flight service station through May 15, stating kind of bird, altitude, location in relation to the nearest city, direction of flight, and date of sighting. These reports will provide assistance to a joint Federal Aviation Administration-Interior Department project aimed at dealing with birds' high hazard potential to aircraft.



• AIRCRAFT AND ICE will be the topic drawing FAA's regional engineering and manufacturing personnel to Washington headquarters on April 28. The gathering was called to bring FAA personnel up to date on the latest research in aircraft and engine icing. Presentations will be made by FAA engineers and engine and airframe manufacturers.

• PEAK HOUR SLOTS FOR GENERAL AVIATION at Kennedy International Airport are part of FAA's amendment of the rule adopted to reduce congestion at five of the nation's busiest airports. During the period June 1, 1969 through December 31, 1969, the new rule sets the following hourly limits on IFR operations:
Kennedy—70 air carriers, 5 air taxis, 5 others. (Between 5 P.M. and 8 P.M., 80 air carriers permitted hourly.)
La Guardia—48 air carriers, 6 air taxis, 6 others.
Newark—40 air carriers, 10 air taxis, 10 others.
O'Hare—115 air carriers, 10 air taxis, 10 others.
Washington National—40 air carriers, 8 air taxis, 12 others.
An earlier proposal to ban all general aviation flights at Kennedy between the peak hours of 5 to 8 p.m. has been withdrawn.

• WOULD-BE ADVENTURERS have been put on notice that aircraft hijacking is a Federal crime punishable by a minimum of 20 years and a maximum of death; carrying concealed weapons aboard aircraft is punishable by prison and fines; passengers and baggage are subject to search. To date, 25 persons have been arrested in hijacking attempts.

• PERIODIC FLIGHT TEST RULE DROPPED. FAA has withdrawn a proposed rule which would have required general aviation pilots to undergo periodic flight instruction or proficiency checks. Response from the aviation community indicated that the proficiency program would be unduly burdensome in view of the small number of instructors and FAA inspectors now available to administer it.

• HIGH FLYING HELP for downed pilots equipped with locator beacons. FAA has outfitted its flight inspection aircraft to monitor emergency radio frequencies during routine flight. FAA flight check aircraft crisscross the U. S. daily, checking the accuracy of NAVAIDS, flying almost 10 million miles each year.

London's General Post Office Tower and New York City's Empire State Tower are the goal posts in the May 4-11 London Daily Mail's two-way transatlantic dash for $150,000 in prizes.

HISTORIC LONDON-NEW YORK AIR RACE REVIVED

The London *Daily Mail* has challenged ingenious travelers everywhere to combine any forms of ground and air transportation to make the fastest possible trip from the top of the General Post Office Tower, London, to the top of the Empire State Building, New York, or vice versa. A variety of cash prizes totals $150,000.

The contest commemorates the first transatlantic flight, made by Capt. John Alcock and Lt. Arthur Whitten Brown 50 years ago.

Any individual or company can enter the competition, lasting from May 4 through May 11, and contestants need not fly or drive the conveyances themselves. All military services, companies, organizations, private plane owners, week-end flyers with light aircraft, and ticket holders on commercial planes are eligible.

The Daily Mail will pay $12,000 for the fastest overall time from London to New York and from New York to London. Each top winner will also receive $2,400 and a commemorative trophy.

Other prizes include: $9,600 for the fastest time by any subsonic plane (eachway); $12,000 for the fastest trip using any ordinary scheduled airline flight from London to New York via Shannon, Ireland, and $12,000 for the fastest trip using regularly scheduled airline service from New York to London.

There will also be a $6,000 prize (each way) for an individual not backed by any company, organization, or government agency.

There will even be prizes for non-winners. A British firm will pay $12,000 to the Briton with the "most meritorious non-winning entry", and an American firm will award an identical prize for the "most meritorious non-winning American."

Deadline for all entries is April 19. Complete details and entry rules are available from: Transatlantic Air Race Bureau, The London Daily Mail, 50 Rockefeller Plaza, New York, New York 10020.

FAA Doubles Pool of Aircraft N-Numbers

FAA has modified its aircraft identification system to make more N-numbers available for new aircraft. The use of a second suffix letter will increase the pool of possible number-letter combinations from the previous total of 339,000 to 739,000.

Under the new system, FAA may assign one to three numbers and two suffix letters without restriction. Previously, a second suffix was assigned only upon special request and only to specified persons. For example, a person holding the identification number N100A could apply for and receive N100AB, but no one else could apply for that number. General use of a second suffix will permit the assignment of a number such as N100AB to anyone, not just the holder of N100A.

The total number of symbols in an identification number after the prefix "N", which denotes U. S. registry, still will not exceed five. These may be all numbers or up to four numbers and a suffix. A second suffix will not be issued to identification numbers containing four numbers, only to those containing one to three numbers.

While only half of the existing numbers have been issued to date, FAA did not believe that the present system would have been sufficient to meet the needs of the near future. General aviation aircraft have been increasing approximately 8,000 per year.

FAA Suggests Terminal Changes To Help the Handicapped Travel

Airport terminal modifications to simplify air travel for the physically handicapped are suggested in a recent FAA Advisory Circular.

"Airport Terminals and the Physically Handicapped" (AC 150/5200-11) recommends design changes to ease the way for persons with sight, hearing and cardiovascular handicaps as well as those confined to wheelchairs or requiring other walking devices.

Suggested modifications include: non-skid ramps with grades of eight per cent or less; elevators large enough to accommodate wheelchairs, and optimum heights for drinking fountains, toilet facilities, public telephones and hand rails.

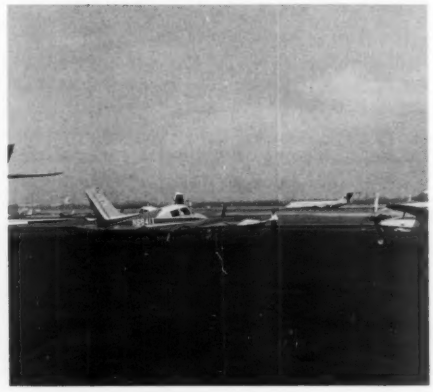
Copies of the circular may be obtained free of charge from Department of Transportation, Distribution Unit, TAD 484.3, Washington, D. C. 20590.

General Aviation Operations Down At Major New York Airports in 1968

General aviation pilots who once frequented La Guardia, Kennedy and Newark airports are taking their planes elsewhere, according to a recent FAA analysis of traffic at New York's three major airports.

While 1968 general aviation operations were down 10.4 per cent from 1967, air carrier operations rose by 6.2 per cent. General aviation use of the three airports plunged sharply following an increase in peak-hour landing fees which went into effect August 1, 1968.

Itinerant general aviation operations at the three airports decreased from 262,791 in 1967 to 235,588 in 1968. Airline operations, on the other hand, increased from 804,164 in 1967 to 854,394 in 1968. The study shows a buildup of light plane usage of Teterboro, Morristown, MacArthur, and Westchester County Airports, all in the New York metropolitan area.

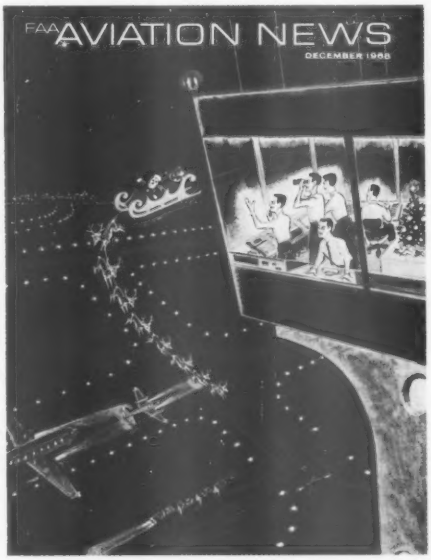


FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Old Timer in a Homebuilt

Congratulations on your continued excellence in propaganda for the airlines. I refer to *FAA Aviation News'* December 1968 cover depicting an airliner being delayed by the guy in the homebuilt and the two engine "Piper Cub."

Jim Cox
Houston, Texas



Apparently you gained the impression that our cover depicted an airliner being held up at a large terminal by two general aviation aircraft—specifically a twin Piper and a "guy in a homebuilt."

The latter is actually piloting an aircraft under special international authority granted many, many years ago. It is a generally accepted practice to accord the white-bearded elderly gentleman the right of way, in view of the extreme length of his route, the antiquity of his equipment, and the infrequency of his schedule (once every 12 months). The hopes and happiness of so many youngsters depend on his staying on schedule that we ask the indulgence of all users of the airspace users—general aviation, military and air carrier alike.

• Who Flies More?

The December 1968 FAA Aviation News carried a percentage breakdown of general aviation flying in regards to pleasure, business, etc., but there was no mention of the hours flown by the various categories. I feel the estimated hours for the different groups should be listed because it would appear from your article that inexperienced pilots fly the greatest number of hours. I believe the greatest volume of flying is done by the more experienced pilots and these statistics should be shown. I believe it is unclear to leave it as it is.

Overland Park, Kan.

The total number of hours flown by all groups included in general aviation in 1966 (latest year for which full figures are available) was 21,023,000. This includes 7,057,000 million hours (33 per cent) by aircraft used in business; 3,555,000 hours (17 per cent) flown by commercial operators; 5,674,000 (27 per cent) flown for instructional purposes; 4,540,000 hours (22 per cent) flown for personal reasons; and 197,000 (1 per cent) hours in the "other" category.

Such data covering all aspects of civil aviation in the U.S. are contained in the "FAA Statistical Handbook of Aviation (1967)", available for $1.25 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.

• Pole Vaulting for Pilots

Imagine the added comfort and safety of flight if FAA would require that all power lines within 2,500 feet of runway thresholds be underground? How many accidents and fatalities have "pole vaulting" and "line jumping" caused during daylight hours? Night?

Gunnar S. Jenson
Flossmoor, Ill.

FAA would like to see obstruction-free approaches at every airport and seeks to help airport owners and operators attain that goal. However, FAA authority is limited by the Federal Aviation Act and the Federal Airport Act.

Publicly owned airports with obstruction problems may qualify for Federal aid to obtain control over the approach areas so that the hazardous condition can be removed. If the airport is privately owned the problem must be resolved between the airport owner and the power company. In any case, the responsibility for clear approaches is the airport owner's.

• Steam Jets and Gipsy Moths

The letter writer in Flight Forum in the December 1968 *FAA Aviation News* is reviving an old idea when he suggests a jet of steam in the center of an airfield be used as a wind sock.

Back in 1933 when I learned to fly at an airfield near London there was such a pipe emitting a kind of chemical smoke to tell wind direction, strength and turbulence. It was a most informative device as the airplanes of the day, Gipsy Moths etc. were slow to land and did not do too well in crosswinds or turbulence and any information on the surface wind conditions was essentially a great help. Of course it would have been of little use at night.

Sir Frederick Hervey-Bathurst
Rumson, N. J.

• Sky Cab for Sportsmen

We are interested in starting a flying service to transport sportsmen to remote areas of Wyoming, Colorado, Montana, Idaho and Washington for hunting and fishing.

Our problem is twofold: what kind of equipment—single or twin, land or amphibian—would be most efficient for this kind of operation; and what are the regulations governing an enterprise of this kind?

Tucson, Ariz.

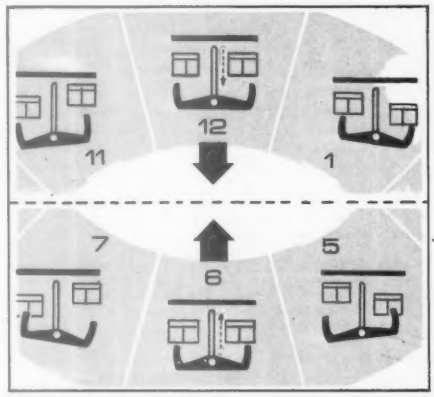
FAA cannot recommend any particular aircraft type or manufacturer but you might get this kind of information from the National Air Transportation Conferences, 1346 Connecticut Ave., N. W., Washington, D. C. 20036. This is an organization of air taxi operators.

Air taxi operations are governed by FAR 135, "Air Taxi Operators and Commercial Operators of Small Aircraft," obtainable for 35 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Also, FAA Advisory Circular AC 120-14 "Air Taxi Operators and Commercial Operators of Small Aircraft" (Titles are identical) describes various aspects of air taxi operations. This free publication is available from Federal Aviation Administration, TAD 484.3, Washington, D. C. 20590.

• Which Way the Wind?

In the March issue the diagram showing control positions for taxiing is not in accordance with your text. At the 12 o'clock and 6 o'clock positions, the small arrows indicating up or down elevator are pointing in the wrong direction.

J. Prokop
Flight Standards Service



Mr. Prokop is right, of course. The corrected diagram is shown above.

• Why Pay More?

As a professional aviator and flight instructor I am appalled at the price increase from $13.00 to $24.50 for the *Airman's Information Manual*. Since the new sectional aeronautical charts do not list pertinent information on the back, as did the old charts, subscription to the AIM is necessary for safe flight.

W. T. W.
Arlington, Va.

The new prices for AIM are: Part 1—$2.50; Part 2—$4.00; and Parts 3 and 3A—$18.00. Prices for all government publications are established by the Superintendent of Documents, U. S. Government Printing Office, in accordance with Congressional guidelines. Of necessity, prices are reviewed periodically and adjusted to cover the rising costs of publication. The recent rise is the first price change in 15 years.

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DEPARTMENT OF TRANSPORTATION
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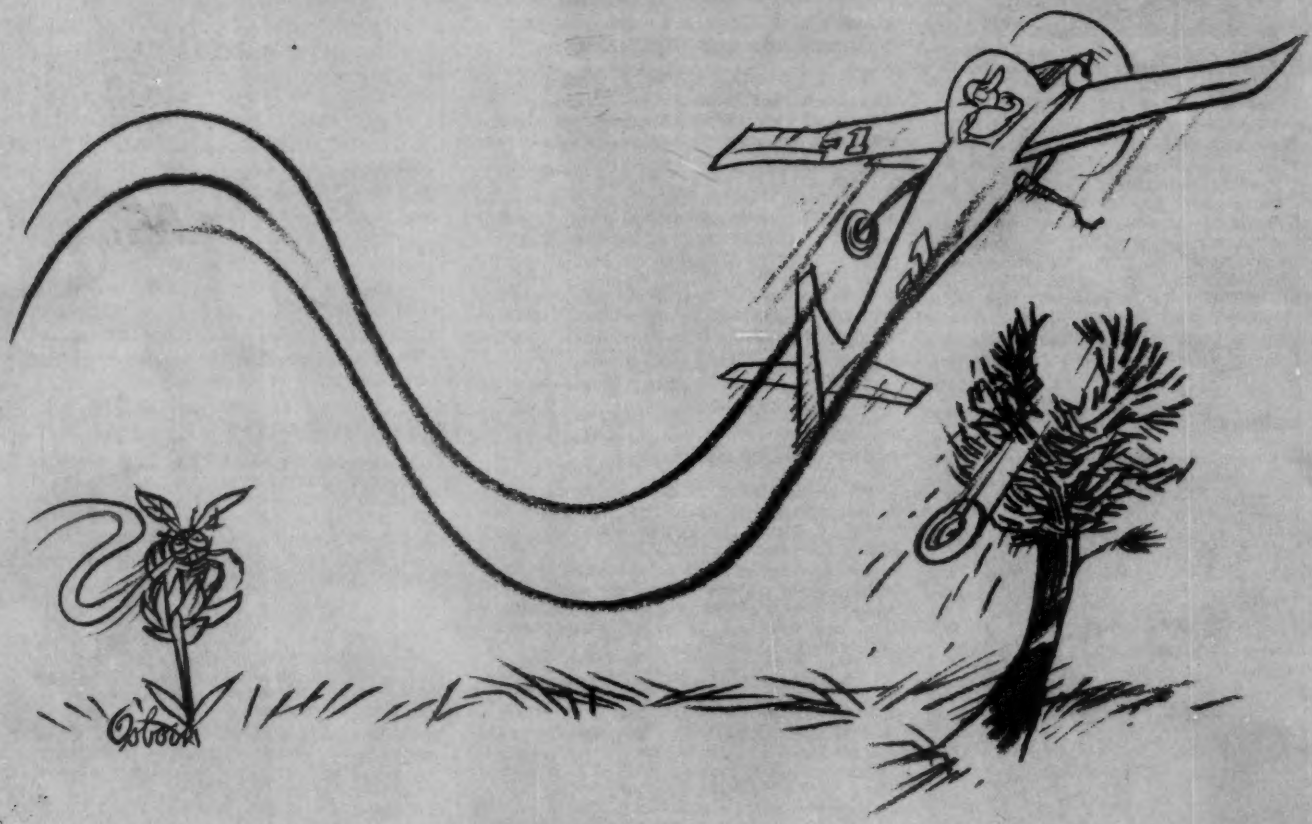

Stay clear of the trees

Suggested by W. F. Orner